Meeting Minutes

Date | Time | 9/21/2016 1:00 PM | *Pacific Standard Time*

Location | The Lands Council (TLC)
Saranac Building
25 West Main Ave, Spokane
2nd Floor Large Conference Room

Project | Fungi PCB Research

Conference Line | Ex. 6 Personal Privacy (PP)

Meeting Reference Documents:

1 - Meeting Minutes 08102016
2 - VW ExpDesign 9-8-2016
3 - Mycoremediation PP for Wastewater
4 - Dropbox Pictures Folder:
Project Documents/Pictures

Attendees in person:

Marcia Davis, City of Spokane
Adrianne Pearson, City of Spokane
Doug Greenlund, City of Spokane
Jeff Donovan, RPWRF
Heidi Montez, The Lands Council
Aimee Navickis-Brasch, NBSWE

Attendees on conference line:

Michelle Mullin, EPA Region 10
Mark Maurer, Thurston County
Maureen Johnson, Certified Safety Professional

Meeting Minutes

The meeting opened with the attendees introducing themselves. Heidi then provided an overview of work complete on the research project since the last meeting on August 10, 2016. Specifically, she has been completed all work through Task 4 of the Experimental Design. At the time of the meeting, Heidi was working on Task 5: Vactor Waste Ratios. She indicated all jars of fungi species were growing in the Vactor Waste, however, some jars also have mold growth (with more mold observed in the jars with higher ratios of vactor waste). This is concerning because mold can feed on and kill mycelium. For this reason, the presence and quantity of mold will considered in the criteria used to select samples for PCB testing (see Sample Selection: Task 6, Step A).

The following is a summary of the groups discussion during the meeting organized by topic as it relates to the experimental design:

Task 5 Completion

Heidi discussed her plans for determining when Task 5 would be complete which is defined in the Experimental Design document, step D 4 as 'when all the fungi in the jars have fully colonized'. Marcia asked Heidi how she would determine when the fungi were done growing. Heidi indicated she was trying to locate information regarding the growth rates of the different fungi species and if the found, she was considering using this information to estimate when the fungi would stop growing (also see Fungi Growth Rates from 8/10/2016 meeting minutes).

- Update - Since the last meeting, Heidi decided not to use the growth rates for each fungi species to determine when Task 5 was complete. Instead, the Task 5 fungi growth period will be the same number of days for each species.

Number of Samples

The group discussed the number of samples that will be submitted for PCB analysis which is based on the budget. The original budget was $20,000 and approximately $14,315.50 remains after the baseline samples were analyzed. The PCB testing costs are $725 per sample, so the remaining budget could cover the cost for approximately 20 samples. Marcia recommended random selection for triplicate sample selection. Jeff reminded the group that the lab will conduct duplicate analysis on 10% of the samples submitted as part of standard Lab procedures. Lisa suggested freezing the remaining samples. She suggested freezing everything just in case more testing needs to be done in the future.

- Number of Samples – Based on the outcome of the meeting, 20 samples will be submitted to the lab for PCB analysis which includes: 2 samples per species (16 total), a triplicate samples from one sample jar (2), and 2 controls (1 vactor waste only and 1 sawdust and vactor waste only).
- Action Items:
  - Heidi will locate a freezer for TLC lab for freezing remaining fungi jars.
  - Adrianne will investigate opitions if the PCB testing exceeds the $20,000 budget

Sample Selection: Task 6, Step A

Since there are 46 sample jars and only enough budget to analyze 20 samples, it is necessary to define a criteria for identifying which samples (jars) would be selected for analysis. The group discussed the following ideas for prioritizing jar selection:

- Jars with less than 50% mold (due to concerns regarding mold impacting mycelium growth)
- Jars with a high density of fungi (based on qualitative growth measurements defined in Task 3)
- Jars with higher ratios of vactor waste.

Heidi plans to submit all samples to the lab for PCB analysis by December.

- Action Item – Heidi will finish developing the procedures for sample selection and revise the experimental design accordingly.

Task 6: Sample Collection

The group discussed the methods and procedures for collecting samples including methods for homogenizing the samples prior to analysis. The following summarizes the highlights of the discussion:

- Lisa indicated there is a potential for fungal spores to get all over the lab once the jars are opened. Maureen also brought up health risks associated with air borne mold spores: even though they are only small amounts, she recommended Heidi minimizing her exposure as much as possible. To prevent these conditions the group discussed the option of submitting

the entire jar to the lab for analysis and having the lab collect the sample from the jars and homogenize the samples prior to testing.

- Mark recommended defining the sample collection procedures prior to submitting the samples to the lab because otherwise the lab will decide how to collect and homogenize the sample. Michelle also recommend defining the sample extraction method prior to submitting the samples for analysis.
- Lisa recommended submitting the largest sample size the lab could test to the lab for analysis. Jeff volunteered to contact Pacific Rim Labs to determine max sample size they can analyze.
- Mark suggested collecting a 5-6 core samples from center of the jar. Lisa suggested using cork hole bores (corks in lab with ½ " diameter are sold by Fisher Scientific). Jeff indicated that copper tubing also works for pulling samples.
- Michelle recommended Heidi use the Incremental Sampling Methodology: a systematic process for collecting and homogenizing samples from heterogeneous sources.
- Jeff suggested pulling samples from the jars, placing them in 4-ounce jars, and then freezing the samples. Pacific Rim Labs also requested that the samples be frozen prior to and during shipment because 'molds should be dead before crossing the border' (per email dated 9/20/16 from Pacific Rim to Jeff Donovan). Then all samples could be sent at one time instead of when each sample is ready.
- The group also discussed options for homogenizing samples including using a blender however, concern was raised regarding touching the sample (the more touching of the sample and the more likely it is to become contaminated.)

    - Action Items:
        - Jeff will contact Pacific Rim Labs to determine max sample size they will accept and can analyze.
        - Heidi or Jeff will verify that the methods for shipping fungi samples to Pacific Rim labs in Canada meets the Canadian customs requirements (i.e. the 9/20/16 email from Pacific Rim Labs indicated that importing live organisms into Canada is not allowed). They will also verify that freezing will kill the mold.
        - Heidi will investigate using the incremental sampling method
    - Update - Since the last meeting, the group has exchanged several emails regarding sample collection and homogenization methods. Based on this discussion along with emails from Pacific Rim Labs, the sample collection and homogenization procedures were developed. See Task 6 in the VW Expdesign 10-24-2016 document for details.

Next Meeting

The group decided to hold the next meeting in December after the samples were submitted for analysis. The group discussed potential dates and times for the next meeting and decided on the week of December 5th – 9th.

- Update: Next meeting is Wednesday December 7th from 1:15-3:15pm PST.